

Explanation

NOME GROUP

Blue-gray calcite marble.

Impure marble and calc-schist

Black graphitic and siliceous argillite, phyllite and schist, siltstone and quartzite with rare intervals of gray calcite limestone and marble.

Pelitic and semipelitic quartz mica schist containing white mica + chlorite + quartz ± chloritoid ± albite; epidote ± graphite. Equivalent to the PS unit of Pollock, 1982, Lieberman, 1988, Patrick and Lieberman, 1988, Todd and Evans, 1993 as mapped in the Nome Group.

Undifferentiated mixed mafic volcanic, metasedimentary (including marble) and tuffaceous unit of low metamorphic grade. Unit is extremely poorly exposed and mapped only in the northwestern part of map area.

Mafic to calcareous chlorite albite schist containing chlorite + albite + quartz + white mica ± epidote/clinozoisite ± biotite ± titanite ± calcite. Equivalent to QFG of Pollock, 1982, Lieberman, 1988, Patrick and Lieberman, 1988, Todd and Evans, 1993, and pCPzsa, pCPzt, pCPzic of Bundtzen et al., 1994.

Massive to foliated metabasalt flows (?) and metamorphosed gabbro/diabase sills, dikes, and/or stocks containing chlorite + albite + epidote ± actinolite ± glaucophane ± garnet ± sphene ± quartz ± white mica ± biotite ± calcite. Equivalent to the pCPzb unit of Bundtzen et al., 1994.

KIGLUAIK GROUP

Black graphitic, siliceous argillite and quartzite containing biotite ± muscovite ± sillimanite. Very distinctive but less resistant than surrounding pelitic units. Equivalent to GQ of Pollock, 1982, Lieberman, 1988, Patrick and Lieberman, 1988, Todd and Evans, 1993 and pCPzsgb of Bundtzen et al., 1994.

Undifferentiated greenschist to amphibolite facies pelitic and psammitic schists containing quartz + biotite + graphite ± staurolite ± sillimanite ± muscovite ± K-feldspar. Includes subunits pCPzqc and pCPzbs described below. Equivalent to PS unit of Pollock, 1982, Lieberman, 1988, Patrick and Lieberman, 1988, Todd and Evans, 1993 as mapped in the Kigluaik Group.

Quartzose and calc-silicate bearing psammitic schist and quartzite containing biotite + plagioclase ± actinolite ± diopside ± epidote/clinozoisite ± graphite ± white mica ± sillimanite with lesser marble and pelitic schist horizons. Proportion of pelitic schist increases eastward in the map area.

Biotite-rich pelitic schist containing quartz + biotite + graphite ± muscovite ± garnet ± staurolite ± sillimanite with intervals of biotite-bearing quartzose graphitic schist and psammitic schist.

Heterogeneous metasedimentary unit that includes platy quartzofeldspathic, pelitic and quartzose schists, lesser biotite-rich quartzite, gray calcite marble, and calc-silicate-bearing impure marble interlayered on a scale varying from a few centimeters to several meters. Quartzofeldspathic schists contain biotite + K-feldspar + plagioclase + biotite ± graphite ± sillimanite ± garnet. Pelitic schists contain biotite + quartz ± graphite ± garnet ± sillimanite + K-feldspar ± plagioclase.

Ten to thirty meter thick marker horizon of medium-grained bluish/black quartzite with minor biotite ± garnet ± sillimanite.

Distinctive, highly resistant, coarse-grained paragneiss and schist present in layers varying in thickness from 10-100 meters containing quartz + plagioclase + biotite ± sillimanite ± K-feldspar ± garnet ± graphite. Locally contains unmapped subunits of pCPzbg. Pervasively migmatized in places.

Undifferentiated pelitic to quartzofeldspathic units of the Kigluaik Group. Includes pCPzbs and pCPzbgg as dominant subunits.

Undifferentiated calc-silicate and marble bearing units of the Kigluaik Group. Includes pCPzm and pCPzmc as dominant subunits.

Massive to foliated blue-gray calcite marble.

Massive to foliated blue-gray calcite marble interlayered with calc-silicate bearing dolomitic and calcite marble, schist, and gneiss.

ORTHOgneiss

Precambrian Dorothy Creek Orthogneiss and possibly equivalent units. Dated at 680 Ma (Patrick, 1993; Wright, unpublished data).

Undifferentiated orthogneiss. Not dated but likely Paleozoic or older based on deformational history and compositional similarity to the Thompson Creek Orthogneiss.

Cambrian Thompson Creek Orthogneiss and possibly equivalent units containing K-feldspar + quartz + plagioclase + biotite ± garnet ± sillimanite. Dated at 550 Ma (Amato et al., 1994; Wright, unpublished data).

Cretaceous garnet-bearing granitic orthogneiss dated at 105 Ma (Amato et al., 1994) and possibly equivalent orthogneisses.

Cretaceous (?) syenitic orthogneiss containing K-feldspar + hornblende + garnet.

IGNEOUS ROCKS

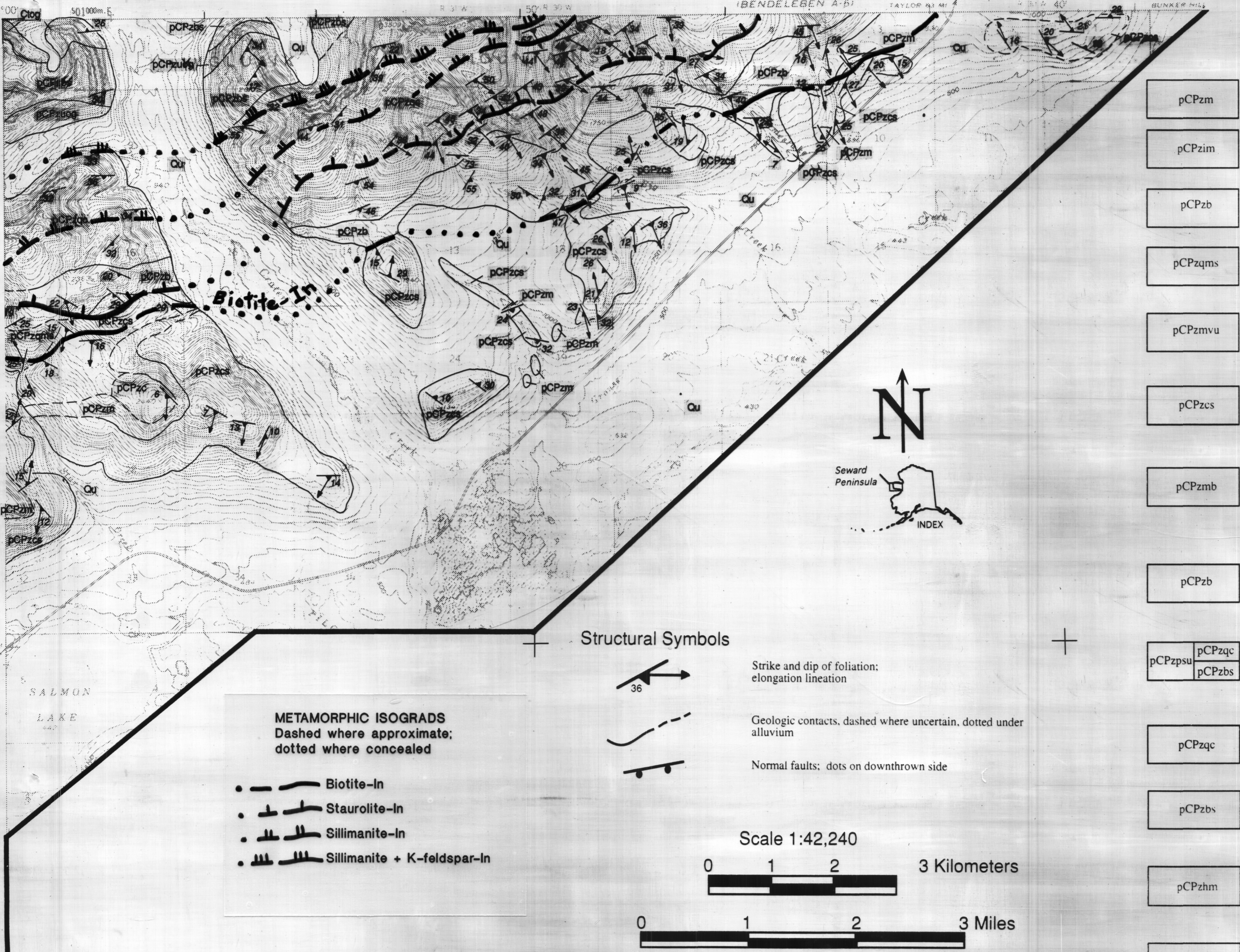
Fine to medium grained biotite hornblende diorite, quartz diorite, granodiorite and gabbro. Includes lower unit of the Kigluaik pluton.

Leucocratic fine to medium grained biotite granite and granodiorite. Includes upper unit of the Kigluaik pluton and minor granitic dikes.

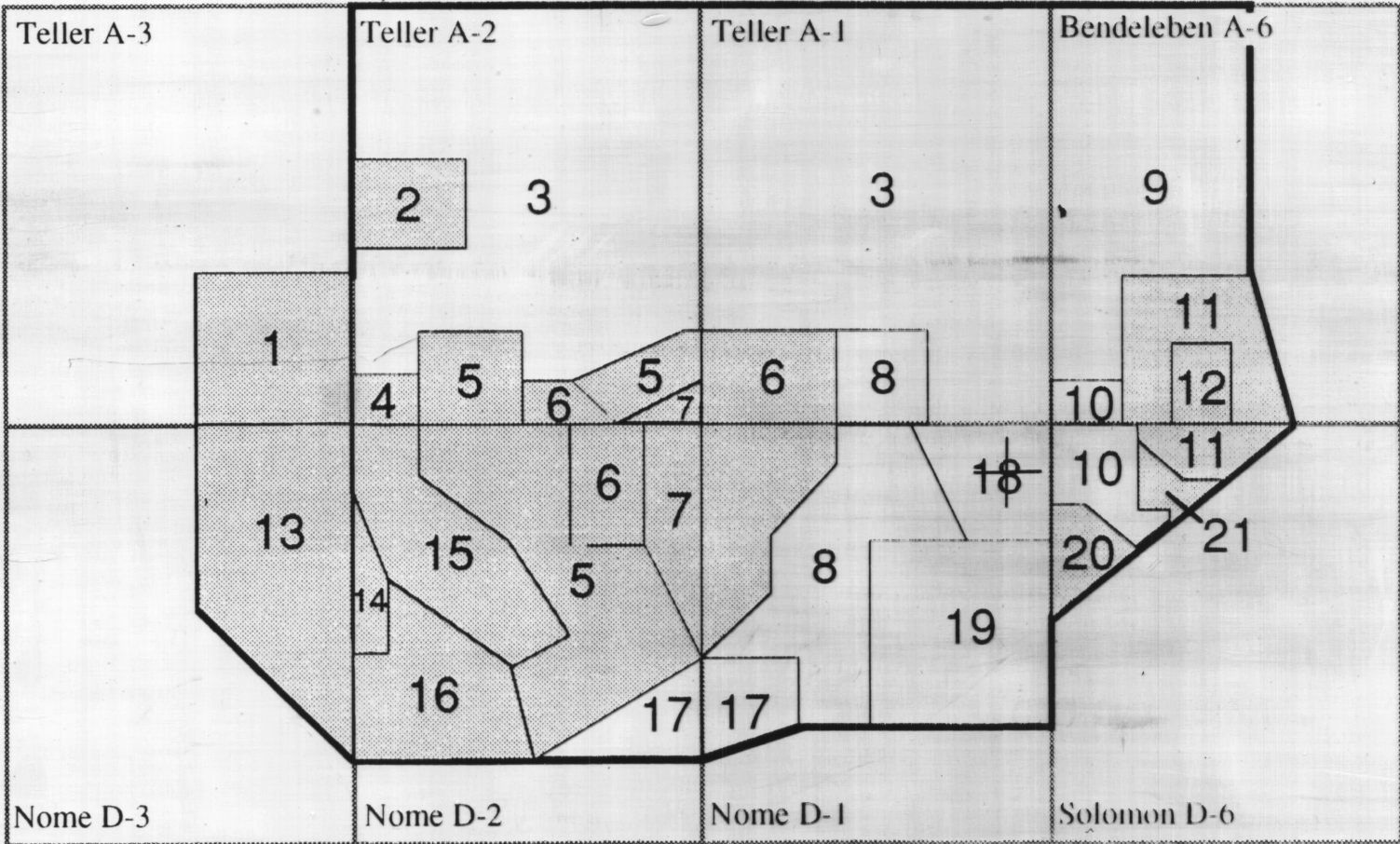
Pegmatite dikes and sills containing quartz + feldspar ± biotite ± sillimanite ± garnet ± muscovite ± tourmaline. Dikes and sills range from highly deformed to cross cutting.

Smaller-volume pegmatite dikes and sills, generally 5-10 m thick. Shown schematically.

Mafic to intermediate diabase dikes, generally 1-5 m thick, containing plagioclase + hornblende + biotite ± clinopyroxene ± olivine ± quartz. Dikes cut across regional foliation, are steeply dipping, and are generally oriented N30°E to N50°E. Dikes are chemically similar to the lower unit of the pluton (Kd) and are 83 Ma based on ⁴⁰Ar/³⁹Ar dating of biotite and hornblende.

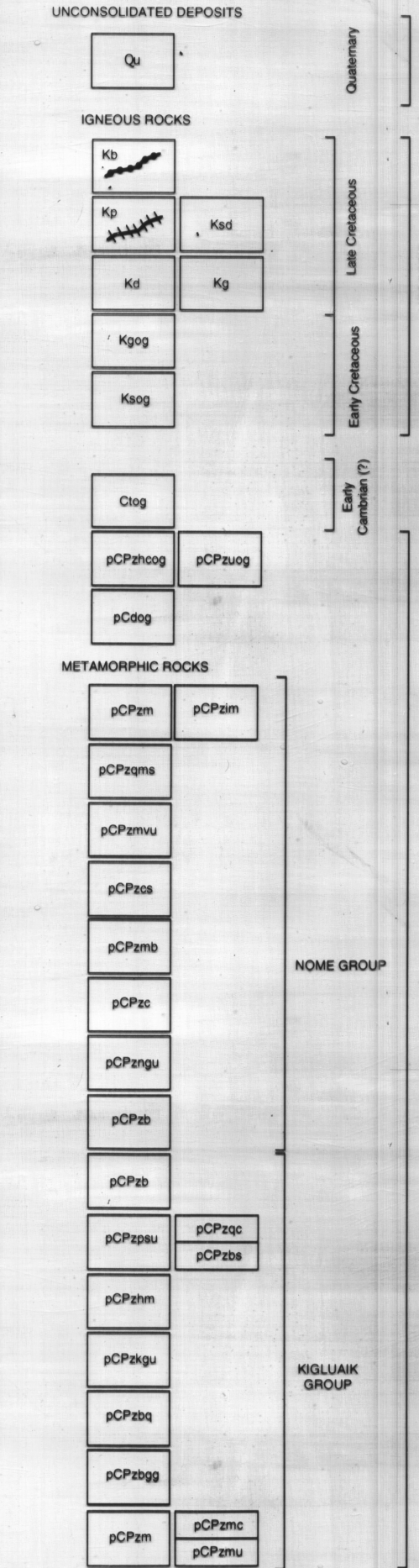


Mapping Credits

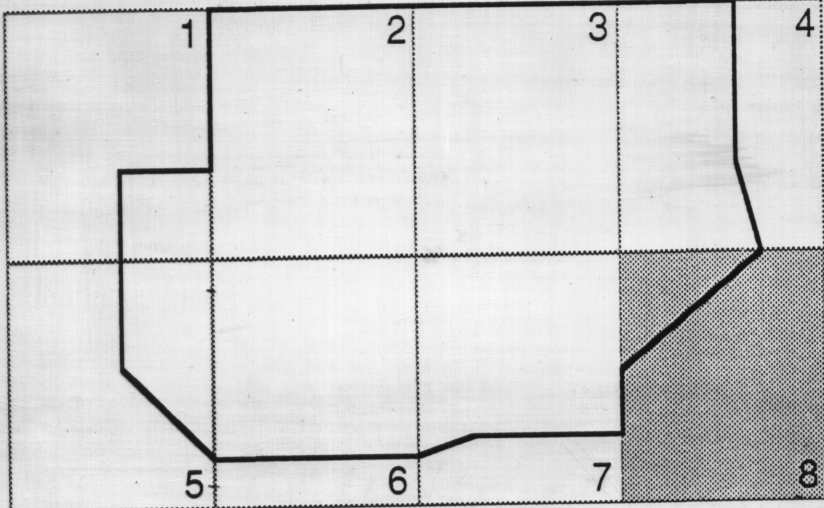


- Shaded area was mapped during this study. Unshaded area is compiled from previously published work.
- 1) K.A. Hannula, E.L. Miller, C. Rubin, and J. Lee, 1991
 - 2) E.L. Miller and C. Rubin, 1991
 - 3) Sainsbury, 1974
 - 4) J.M. Amato, E.L. Miller, and J. Toro, 1992
 - 5) J.M. Amato, 1992
 - 6) P.B. Gans, J.M. Amato, A.T. Calvert, T.A. Little, 1991
 - 7) P.B. Gans, J.M. Amato, A.T. Calvert, K.A. Hannula, 1990
 - 8) Todd and Evans, 1993; Lieberman, 1988
 - 9) Till et al., 1986
 - 10) Stumick, 1984
 - 11) E.L. Miller and A.T. Calvert, 1989
 - 12) A.T. Calvert, 1989
 - 13) E.L. Miller, T.A. Little, and A.T. Calvert, 1989
 - 14) A.T. Calvert and J. Lee, 1991
 - 15) J.M. Amato, E.L. Miller, J. Toro, and J.E. Wright, 1992
 - 16) J.M. Amato, K.A. Hannula, and A.T. Calvert, 1991
 - 17) Bundtzen et al., 1994
 - 18) Hummel, 1963
 - 19) Pollock, 1982
 - 20) E.L. Miller, J. Toro, F. Cole, 1991; J.M. Amato and E.L. Miller, 1994
 - 21) T.A. Little, 1989

CORRELATION OF MAP UNITS



Geologic Map
Solomon D-6



Geologic Map of the
Kigluaik Mountains,
Seward Peninsula, Alaska

Compiled by Jeffrey M. Amato